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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,619	12/27/2003	Vladimir S. Moxson		7498

7590 09/27/2007
ADVANCE MATERIALS PRODUCTS, INC.
1890 GEORGETOWN ROAD
HUDSON, OH 44236

EXAMINER

ZHU, WEIPING

ART UNIT	PAPER NUMBER
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1742

MAIL DATE	DELIVERY MODE
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09/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/748,619	Applicant(s) MOXSON ET AL.	
	Examiner Weiping Zhu	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 5-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-4, drawn to a titanium matrix composite material, classified in class 75, subclass 252.
- II. Claims 5-14, drawn to a method for manufacturing a titanium matrix composite material, classified in class 419, subclass 14.

The inventions are independent or distinct, each from the other because:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the titanium matrix composite material as claimed can be made by another and material different process such as shock wave consolidation.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Vladimir S. Maxon on September 17, 2007 a provisional election was made without traverse to prosecute the invention of I, claims 1-4. Affirmation of this election must be made by applicant in replying to this

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Office action. Claims 5-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (US 5,722,037).

With respect to claim 1, Chung et al. ('037) disclose a fully-dense discontinuously-reinforced titanium matrix composite material comprising (col. 6, lines 6-32):

- a. a matrix of a titanium alloy;
- b. ceramic and/or intermetallic hard particles in the matrix in the amount of 50% by volume or less (i.e. 0-50% by volume);
- c. complex carbide and/or silicide particles that are at last partially soluble in the matrix at the sintering or forging temperature such as Ti_3AlC_2 , Ti_2AlC , V_2C and $(Ti, Al)C$ dispersed in the matrix in the amount of 20% by volume or less (i.e. 0-20% by volume).

Chung et al. ('037) do not specify that the titanium matrix composite material contains complex carbide particles in the matrix. However, when Chung et al. ('037)'s compressed body containing Ti, Al and V reacts with methane at high temperatures, not

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only the titanium carbide will be formed in-situ as disclosed by Chung et al. ('037) (col. 6, lines 6-32), but the complex carbides such as Ti_3AlC_2 , Ti_2AlC , V_2C and $(Ti, Al)C$ as claimed will also be formed within the matrix. The types of the complex carbides formed are dependent on the alloying elements used while the amounts of the complex carbides formed depend on the concentrations of the alloying elements and the reaction variables such as the temperature and the retention time as disclosed by Chung et al. ('037) (col. 6, lines 37-41). It would have been obvious to one of ordinary skill in the art to optimize the alloying elements and the reaction variables in order to achieve desired properties of the titanium composite. See MPEP 2144.05 II.

With respect to claim 2, Chung et al. ('037) disclose that the titanium composite is characterized by a density of 93% or higher of the theoretical density with closed pores and very low porosity (col. 5, lines 1-19 and col. 6, lines 8-19). The density of the titanium composite overlaps the claimed density. A prima facie case of obviousness is established. See MPEP 2144.05 I.

With respect to claim 3, Chung et al. ('037) disclose that the matrix alloy is a α - β titanium alloy (Ti-6Al-4V) (col. 6, lines 8-19).

With respect to claim 4, Chung et al. ('037) disclose that ceramic and/or intermetallic hard particles are titanium carbide particles (col. 6, lines 8-19).

Conclusion

3. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose

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telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

9/20/2007


ROY KING
SUPERVISORY PATENT EXAMINER
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